

ABSTRACT

This invention relates to ionization detectors in which the direction of propagation of the radiation beam is co-linear to the direction of flow of the sample fluid of interest. In one embodiment, the ionization detector comprises an ionization chamber, a first electrode, a second electrode, and an optical window. The first and second electrodes are capable of forming an electrical field in the ionization chamber. The ionization chamber allows a sample fluid to flow through. The optical window is configured to allow a radiation beam to enter the ionization chamber in a direction that is co-linear to a direction of flow of the sample fluid in the ionization chamber. Preferably, the radiation beam is generated by a laser, such as a pulsed UV microchip laser, and molecules in the sample fluid are ionized through resonance-enhanced multiphoton ionization.